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THE JOURNAL OF PHILOSOPHY

PERCEPTUAL AND MEMORY PERSPECTIVES

THE philosopher, perhaps because of his proverbial impecuniosity, has had much to say about the penny; but what he has often said unnecessarily conflicts with common sense. Let us take the visual experience of the blessed penny. Here I hold it in my fingers and turn my hand about. It looks different with every turn. Its shape undergoes all the changes from being round to being a rather slim bar. Common sense says that it is the same penny that I have been seeing and handling all the time.

But now comes a philosopher who says: "It is quite true that the visual shapes of what you have been seeing have been changing, but, of course, if the penny itself has a shape, it can have only one shape. And therefore what you have been seeing is not the shapes of the penny itself, but merely the 'appearances' of the shape of the penny. And since these appearances can not all belong to the penny in itself, we must find a place for them not in the penny, but somewhere else. We must set up a class which we shall call 'sensa.' The word 'appearance' is ambiguous. When you say that a thing appears to be so and so, there is danger that you may think that the appearance somehow *belongs to the thing,* and it is just this supposition that you must guard against at the peril of your philosophical life. By giving the name 'sensa' to what in the case of the penny we were dealing with, we escape the danger of supposing that the seen qualities are qualities of the *penny.* They are things of another sort altogether, in some adventitious way connected with the penny. When the penny is in a certain external relation to your eyes, a sensum is experienced. It is true that those of us who have the wit to recognize that the sensum is not a quality of the penny disagree violently among ourselves as to its metaphysical status. Some of us make it 'mind-dependent,' some do not; and among those who do not, some even go so far as to recognize it as a citizen of a realm apart from the corruption and thievery of time. But these differences of opinion are another matter. What is of prime importance here is the recognition that *no* sensa are qualities of physical *pennies,* whatever else they may be."

All this is very well, once it is granted that if a penny itself has a shape it can have only one shape; but why grant this *dictum de*

uno? I see no reason for granting this claim unless it be for the joy of witnessing or even engaging in a fight as to what shall be done with sensa, once they have been detached from the penny.

Of late there has been a well-recognized tendency to treat certain phases of experiences as instances of perspectives. The reader need only recall certain features of the philosophies of Whitehead, George Herbert Mead, and Lord Russell, to assure himself of the truth of this statement. It is my purpose in this paper to fall in with this movement and if possible to carry it still further. First let me touch briefly upon the logic of perspectives with a view to seeing whether perceptual and memory experiences may not adequately be treated as perspectives.

Among relational complexes there is an important kind of which a group of brothers is a familiar instance. Here the brotherhood relation is conditioned; i.e., it is derived from a relation in which each of the terms, A, B, C, stands to F and M, the common parents. The parents are not members of the group of brothers, but it is by virtue of the sonship relation in which each member of this group stands to F and M that A, B, C are brothers. Let us designate the sonship relation by r_1, and the brotherhood relation by r_2. An obvious but incomplete analysis of the logical situation reveals a number of complexes, $Ar_1\ (F, M)$, $Br_1\ (F, M)$, $Cr_1\ (F, M)$, and a resultant complex Ar_2Br_2C. In symbolic logic the word "inherit" is generally used in a strictly linear sense; but here we have inheritance of the cognate variety. Two males inherit brotherhood from their common parents. When we have a relational complex such as Ar_2Br_2C, given above, where r_2 is cognately inherited from a term or set of terms such as F and M, to which A, B, C are each related by a relation r_1, I shall call $r_1\ (F, M)$ the "condition" of the complex Ar_2Br_2C; and for brevity I shall also call either r_1 or (F, M) the "condition" of the complex, it being understood that whichever is mentioned the other is likewise meant.

It should be observed that the condition of a conditioned complex is not necessarily the cause of the physical existence of the terms of the conditioned complex, although in special cases it may be. Such a special case we have in the instance of brothers, who owe their physical existence to their parents. But just at present I am dealing with the *logic* of relations, not with physics or physiology. To name a few relational complexes whose conditions are not the causes of the physical existence of the terms of the complexes, we have roommates, fellow-townsmen, U. S. Senators, France's allies in the World War, and the satellites of Jupiter. It should also be repeated that the condition of a conditioned complex is not a term in *that* complex.

In projective geometry we have instances of conditioned com-

plexes. Take any point *O* called the center of projection, and consider a group of other points in their respective relations of direction from *O*. Thus all points in any straight line-segment *OM* are projectively (i.e., directionally) identical with respect to *O*. Let *A* and *B* be any two points on *OM*, and let *C* and *D* be any two points on another straight line-segment *ON*. Consider the straight line-segments, *AC* and *BD*. Any point *F* on *AC* is projectively identical with some point *G* on *BD*, and the projective (i.e., angular) length of *AC* is equal to the projective length of *BD*, in the projection from *O*. By giving the plane determined by *OM* and *ON* a rotation of 180 degrees about the line *OP* that bisects the angle *MON*, we get two surfaces described by the rotation of *AC* and *BD*. Any point on either surface is projectively identical with some point on the other surface, and the projective areas of the two surfaces are equal.

When in the preceding paragraph it is said that certain lines are projectively equal in length, and that certain surfaces are projectively equal in area, it is meant that these mathematical elements *where they respectively are* are equal in the projection *from O*. More generally, *any spatial element in a projection has its projective characters where it is, this "where" being determined in the first instance by distance and direction from the center of projection.* Thus in any projection there are two places under consideration, the place *at* which and the place *from* which. The projection, while "transcending" either place, does not transcend *itself*.

Now the word "projection" as used in geometry is likely to mislead the unwary. When a mathematician "projects" a line, he is doing one of two things (or both). *Either* he is paying attention to a line already given in the postulates with which he is operating, *or* he is actually or in imagination drawing a line from one point to another. The word "project" is literally applicable to the latter act, and it is applied to the former only by metonymy. The pure mathematician does not literally project, i.e., draw out any lines. The reason why it is important to emphasize this is that there is a philosophical theory that our percepts are projected or thrown out from the brain into a space that arises as the result of this projection. In this literal sense there is no evidence that our percepts are projections. But in the figurative sense I shall maintain that the spatial characters of our percepts are projections. They are initially where we perceive them, but we can in imagination throw out lines from the center of projection, say from the focus of one of our optic lenses, and we can then describe seen spatial relations in terms of these projections. It might not be a bad guess that the philosophical doctrine of perceptual projection was suggested by a mathematical tyro's view as the nature of projective geometry.

Because the mathematician was supposed to draw out in certain directions the lines he deals with, so the "mind" was supposed to throw out from the retina the space it sees, and to project into this space any percepts it receives. This theory is, of course, a pure myth.

Let us now pass to an application of projective geometry which all draughtsmen learn to make. I will describe it as simply as I can. Keeping one eye constantly closed, I place a cube on the table before me; and at right angles to the direction of the center of the cube from my open eye, I interpose a sheet of transparent material upon which pencil tracings can be made. Holding my head steady I look at the cube through the transparent sheet and trace on the sheet the projections of the seen edges of the cube. What I have thus done is to make a drawing of the outlines of the cube as seen from my position with respect to the cube. It is important to emphasize the thoroughly relational character of the situation involved in that performance. (1) There is the relation of distance and direction of the cube from the retinal focus of the pencil of light-rays that came from the cube through my optic lens. (2) There is the perpendicular relation of the sheet to the direction between that focus and the cube. (3) There is the relation between (*a*) what under these conditions I have drawn and (*b*) what I saw when I was drawing it. It is this last relation that I wish to emphasize here; but in emphasizing it I must not ignore two other relational facts: (*c*) What I have drawn is called a linear perspective drawing of the cube in the plane of the sheet, and (*d*) what I saw (among other things) was the cube *in the visual perspective*, the mathematical characters of the cube being determined by its distance and direction from my retinal focus. The drawing is *on* the sheet; and when the drawing was made the cube was *beyond* the sheet. In (*d*), the visual perspective, the cube *where it was*, as determined by its distance and direction from my retinal focus, had, *from where that focus was*, the perspective shape I saw.

But we often express this fact elliptically. We say: "The cube had . . . this perspective shape . . . where my eye was." I have indicated by omission-periods the respective places where four important words are left out, namely, "where it was" and "from." We then are likely to erect a theory on these omissions and say that what we saw was *where the eye was;* and since the cube was *not* where the eye was, we are constrained to say what we saw was *not* the cube, but *something else.*[1] Thus a literal interpretation of an idiom is made to distort the facts.

[1] There are many such tricks of language that trip the idiomatic philosopher. Many of them consist in idiomatic transpositions as well as ellipses. Thus: "I saw at the same time two flashes." It is not, however, the simultaneity

From the preceding account it appears that a linear perspective is a conditioned complex consisting of shapes and sizes of objects. The perspective spatial shapes of the objects are conditioned (among other things) by the directions from which rays of light from the respective parts of the objects arrive at the retinal focus; and the perspective sizes of the objects are conditioned by the distances and directions travelled by these respective rays to that focus. If a convex lens is interposed between the eye and an object, the rays arrive from more divergent directions, and therefore in the perspective thus conditioned the object is perspectively larger than it would be in the perspective conditioned by a "naked" eye. This "magnification" is not an illusion, unless incorrect inferences are actually or implicitly made as to the size the object would have in some *other* perspective.

In what has gone before I have been at pains not to prejudge the question whether the cube used as an example was a "physical" thing. But now I insist that there is nothing to prove that it is not. It is *measurable* and thus meets the requirement made by mathematical physicists for recognition of anything as physical. The fact that in different perspectives it has different sizes and different shapes does not prejudice its physicality, since physicists use *angular* measurements with as much frequency as superpositional measurements, and have well-known transformations for passing from one kind of measurement to the other. It is just as much a *physical* fact that the moon's mean diameter as actually measured from the earth is 31′ 51.5, as that it is 2150.6 miles as hypothetically measured on the moon. In view of all this I assume as a *postulate* that, *unless* there is reason to the contrary in any *specific* case, *the seen spatial characters of objects in monocular perspectives are physical characters that belong to physical objects;* however, they thus belong *not absolutely, but with respect to the physical conditions under which the perspectives obtain.* If such a view is to have a distinctive name, I would suggest as the most appropriate name "perspective realism."

Before proceeding to consider other perspectives, it is desirable to enter upon a digression, on return from which we shall be the better able to go further. An obvious objection to my postulate is that after all the object *in itself* can not have all the shapes it is seen to have. But what is meant by an "object-in-itself?" Still dealing only with spatial characters, I think that the natural interpretation of "in" in the expression "object-in-itself" is a spatial

of two *seeings*, but of two *flashes*, that is reported. The correct statement is: "I saw two flashes occurring at the same time." Of course one should not cavil at idioms, since one must use them; but one should protest against the literal interpretation of all idioms.

interpretation. By an object-in-itself (*in eo ipso*), then, is meant —at least I mean—an object *where* it is. In view of what has already been said above, any spatial object-in-itself—i.e., any spatial object *where it is* as defined by its spatial relations to other objects —does *there* have the perspective characters we have been considering. But it does not have these characters *by itself* (*per se*), i.e., *apart from any relations* in which it stands. I should like to rescue the term "thing-in-itself" from the bad repute it has acquired as a result of the confusion prevailing between what a thing really is as part of a larger world and what a thing would be if it were all there is. In this world of ours I know of nothing that is *by itself; en revanche* I know of no reason for not saying that I know many spatial characters that spatial things have *in themselves,* i.e., *in the places where they are,* provided I qualify this assertion by saying that these characters belong to the things by virtue of their relations to something somewhere else.

Much confusion has arisen from not distinguishing between relations and relational characters. For instance, a log, and not the log's relation to something else, is heavy; but it is heavy in relation, say, to a twig. The heaviness is *in* the log *relatively* to the twig. The difficulty is accentuated when instead of using adjectives such as "long" and nouns such as "father," we use abstract nouns such as "length" and "fatherhood." Are these nouns names of relational characters or of relations? They are ambiguously used of both, and then the trouble begins. Thus when, in some exposition of the physical theory of relativity, we are told that length is a relation and not a character belonging to some long thing, we immediately demur because we have actually seen noses that have in themselves inordinate length. On the other hand, when it is said that long human noses have their excessive lengths *in* themselves, we interpret this as meaning that apart from their relations to anything else they have their excessive lengths; then, recalling elephants' trunks, we are tempted to say that any such excessive length is a relation in which human noses stand to elephants' trunks. Thus we are driven from pillar to post. But the difficulty is obviated when we distinguish between characters which things have in virtue of their relations, and the relations in virtue of which they have these characters.[2]

[2] It may be remarked, by the way, that the recognition of this distinction between relational characters and relations removes one difficulty involved in the question much discussed as to the proper way to categorize "beauty." A painting or a face is beautiful: it has the quality of beauty, and it has this quality where it is itself; but it has this quality only in relation to some percipient. Now some claim that beauty is "objective," and seem to mean thereby that it belongs to the beautiful object *apart from any relation in which it stands.* Correctly finding that beauty is a character of the object, they pro-

Much has been written of the "ego-centric predicament." This predicament is only half of the story, the other half being an *altero-centric* predicament. There are always two "centers" in question for anything, the center *at which* it is, and the center *from which* it is what it is.[3] The sufficient means of getting out of the ego-centric predicament is to find ourselves already out of it as a predicament by finding ourselves in a larger setting, where the "predicament" is no longer predicamental. And what holds of the ego-centric predicament holds also of the altero-centric predicament. The assertion of things-by-themselves puts us into an altero-centric predicament. The denial of things-by-themselves is but the denial of what we never find. The denial of things-in-themselves leaves us in a perplexity as to where to place and when to time the qualities that things are experienced as having where and when they are.

Let us now return from this long digression. What has been said of spatial qualities must also be said of temporal qualities. But when we come to these, we are faced with a linguistic inadequacy. In classical projective geometry time is ignored as it is more generally ignored in elementary text-books of classical Euclidean geometry. But in applied projective geometry, i.e., in spatial perspectives, we may not properly ignore time, for here the projections used are the lines of the propagation of light from object to eye. This propagation takes time. Thus we find ourselves dealing with four dimensions, inseparably related. Since not all parts of an object "foreshortened" in a perspective are at exactly equal distances from the eye, what is shown in a perspective drawing is not a picture of what is *physically* simultaneous. Of course in the case of objects in the immediate neighborhood of the eye, this deviation from the physically simultaneous is negligible. But when a projective drawing is made of sun and moon during an eclipse, the sun as shown is physically earlier by some eight minutes, and the moon is physically earlier by a second and a third, than the shown "station-point" or center of projection on the earth. Such a drawing is of a four-dimensional state of affairs, represented in only two of its dimensions: the third spatial dimension and the time di-

ceed incorrectly to deny that it is a *relational* character. On the other hand, their opponents, finding correctly that there is a relation involved, incorrectly proceed to say that beauty *is* the relation involved. When later in this paper we have arrived at the discussion of biological perspectives, we shall see, I trust, that beauty may be considered a character that objects have in certain biological perspectives.

[3] Even the thing-in-itself *par excellence*, the human ego, is indeed what he is where and when he is; but he is that only in relation to other things with respect to which he is that. Thus I am a sensing, perceiving, remembering, emotional, and volitional self. But in any one of these characters I am what I am in relation to what I sense, perceive, remember, love or hate, and will.

mension are left out of the picture. Dealing now with time only in its physical meaning,[4] we have in such a projective drawing, not only a there-from-here picture, but also a picture of then-from-now. If a prominence on the sun is shown, it is a prominence of eight minutes earlier than the station-point shown. And if a "displaced" star is shown, this represents a "displacement" of a star years earlier than the sun shown. There may thus be many different *thens-theres* from the one *here-now,* and at the various *"thens-theres,"* there were various *characters* as from here-now.

Passing from purely geometrical and from physical perspectives, we come to physiological perspectives, an instance of which we have in binocular vision. It is a matter of common knowledge that there is an integrative function performed by the central nervous system. No purely mechanical instrument that can effect such integration has ever been devised. Light passing through two mechanical lenses, disposed with respect to each other as are the two lenses of the normally functioning eyes of a human organism, will not, when brought to a focus, give a three-dimensional negative on a film of a camera. We get a blurred or composite and not a "solid" picture.[5] But what we *see* with our two eyes is something "solid." Now is what we see *physically* solid? In this paper I can not give fully my reasons for the answer I shall give, but I can indicate one of them. But first I must ask and answer another question: "What is meant by 'physical'?" As I have already indicated, mathematical physicists are pretty well agreed in calling "physical" what and only what is responsive to instrumental treatment, plus all mathematical relations discoverable between the measure-numbers thus obtained. In other words whatever is amenable to the instrumental and mathematical operations at the disposal of physicists is physical. Using the word in this sense, it is clear that, when under normal conditions I have a solid in my binocular field of vision, that solid is *physically* solid. Although a camera will not give a "solid" picture of it, other instrumental operations are available that establish its physical solidity. Thus it will reflect light from its seen sides as well as from its seen front. But when I look through a stereoscope at two flat pictures, properly taken, is the "solid" picture I thus see physical? No, because it will not reflect light as a solid does. Not everything, then, that I see as solid is *physically* solid, although under normal conditions what I see as solid *is* physically solid.

This difference leads us to distinguish between physical and

[4] For the difference between physical and perceptual simultaneity, see my article, "Dialectical Arguments against Relative Simultaneity," this JOURNAL, Vol. XXVIII (1931), pp. 421 ff.

[5] I take the word of my scientific friends for this statement.

physiological perspectives. The latter includes the former, but it also includes something more. This something more is what I call exclusively physiological. But when we speak of a physiological perspective—whether it is exclusively physiological or not—we should not mean thereby something necessarily *in* the physiolcgical *organism*. Just as what is in the geometrical or the physical perspective from *O*, is not in *O*, so what is in the physiological perspective *from* a station-point in an integrated nervous system, is not necessarily *in* that system. We may say that it is a *function* of that system, but when we say this we are not using "function" in the sense it usually has in physiology. When the physiologist says that the "function" of the heart is the pumping of blood, what he means is that the heart contracts and expands, and as a physical consequence blood flows into and out of the heart and then courses to the lungs, there to undergo chemical changes. There is a coördination between the physical processes taking place in the heart and various other processes (physical and chemical) taking place in other parts of the organism, and all these processes in their interrelation constitute life, which is a system of such mutually sustaining processes. Of course all these processes require an environment. There must be food for the digestive organs to convert into blood, and there must be blood for the heart to pump, and there must be oxygen brought into the lungs for the oxygenation-function of the lungs to work on, and so on. Each function is the performance of an act by an organ upon what is supplied to that organ, and that performance takes place *where the organ is;* and with the coöperation of other organs the results of that performance are radiated throughout the whole system, and ultimately to the environment.

But there is another meaning of the word "function" much in evidence in mathematics. Thus in the equation $y = x^{-1}$, y is a function of x. But here x is not *doing* anything, as the result of which y gets a certain value; no value of x is a *cause* of the corresponding value of y. But with every given value of x, there is a corresponding value of y, logically implied in the whole set-up under discussion. It is this kind of "function" that we have in a geometrical or physical perspective. With every given distance and direction of any line with respect to *O*, there is given a corresponding perspective length of that line in the perspective from *O*. But *O* is not *doing* anything to the perspective length of the line, nor are the distance and direction of the line from *O* doing anything to the line. These examples illustrate the difference between a mathematical "function" and a physiological "function." It is unfortunate that the same word is used in different sciences in such different senses; for when we are dealing with something that has to be treated by both sciences there is likely to be great confusion.

A physiological function is performed with the expenditure of physical energy. Thus the heart in pumping blood imparts energy to the *blood*. But in the perspective obtaining when one looks at two flat photographs through a stereoscope, there is no evidence that the optic apparatus imparts any energy *to the "solid"* seen in front of the eyes. Indeed this absence of energetic transaction from station-point to objects in a perspective is a general characteristic of perspectives. Even in such non-physiological but physical perspectives as those obtaining when a convex lens is interposed between object and station-point, the "magnification" of the object does not involve any energy lost to the *object*. This kind of change of size of an object, in successive perspectives from one spatial station-point, is to be distinguished from the kind of change of size illustrated in the inflation of a balloon, where physical work is done on the *balloon*. The magnification of an object by a microscope or a telescope is a "function" of the instrument; but here "function" is used in a sense analogous to that employed in mathematics. With difference of convexity in the lenses there is a difference in the magnification. The lenses do work upon the mass-possessing *light-rays* passing through them, bending them; and the directions of these rays, thus physically determined, are the independent variables of which the sizes of the object in the perspective now obtaining are the *mathematical* functions. In a similar manner, the nerves leading from the two eyes of a binocular organism are working when light falls upon them, and this work converges upon a certain area in the brain (thence diverging in various directions). All this is *physiological* functioning. At some time during the process a physiological condition arises, whereupon a perspective obtains, having the retinal focus as its station-point; and this perspective is describable in mathematical terms. The spatial characters of what lies in the perspective are *mathematical* functions of the distances and directions involved. But *no energy is expended upon the magnified object*. While I do not pretend to adequate knowledge of all the relevant factors, I suggest that an attack upon the problem of vision under the assumptions thus made is more promising than one made on the assumption of "sensa" or on the assumption underlying extreme behaviorism. At least on the suggested theory one does not have to belie one's experience in putting inside one's head what is given as out in front of one's eyes.

We now pass on to such "secondary" characters as colors. Once grant, as our theory assumes, that the *spatial* characters of a seen physical apple are perspective characters of the physical apple where the apple is, but from where the seeing organism is, it is but a step to assuming that the *color* of the apple is also a perspective character of the physical apple where the apple is—i.e., of the apple-

in-itself. While, of course, it is always hazardous to insist on taking literally the words of one's mother tongue, there is no harm in cautiously *trying out* literal interpretations and adopting such as fit into the framework of a general theory and also seem fitly to describe what one finds in experience. I therefore try out the availability for this purpose of what is known as "aërial perspective" in the language of artists. Just as draughtsmen endeavor to do justice to linear perspective, so painters strive for aërial perspective on their canvas. Ignoring as irrelevant to my purpose what is called idealization in painting, I assume that a still-life canvas of a dish of fruit with an apple among them may be recognized as being a realistic picture of what is painted. In such a case it is an accurate representation of the apple that is present in my field of vision; and in such a case that *apple* out there where I see it *is* red with varying shades on different parts of its surface. Were I to choose a different station-point the shades would be different. But whatever the station-point, the *apple's* surface has those respective shades of color in the perspective from that physiological station-point. Were I color-blind, I am told that I should see colors that are different; but then there would be something different conditioning the perspective, namely, a different physiological condition in my nervous system. Were a glass of a certain chemical constitution interposed between my eyes and the apple, I should see still another color in the apple. Which, then, of all these colors is the color of the apple? Why not say that they are all colors of the apple, but that each color is the color of the apple in the perspective within which the apple has that color? Why, if the apple is to be colored, should it have only *one* color? If we assume that every color ever seen in any apple is the color of *that* apple in the perspective of the organism which thus sees it, its color may vary with the organism, with the varying conditions of light, with the varying distances and varying particles floating in the air, etc.; but whatever color there is, it is the color of the *apple* in the perspective determined by all the pertinent factors. The color is a function of all these factors; this function is analogous to a mathematical function. Given *such* factors, then there is given *such color*. But *none of the physical energy of the factors is transformed into the color quality*. The color does not start from the organism and rush out with finite velocity to the apple. Whatever rushing is done is from the apple to the organism. This rushing is with velocity *c*, and there is further rushing from retina to brain with different velocity; but there is not a re-traversing of this distance in the opposite direction with reverse velocities. Given all the conditions and presto! the color of the apple where the apple is![6]

[6] What is said about color I should with relevant qualifications also say about all other "secondary" qualities, and also about "tertiary qualities" such

Is, then, the color of the apple the color of the *physical* apple? The answer to this question is similar to the answer to the question whether (*whatever* be one's views as to what it is that is seen when one sees a red square figure) the redness seen is a quality of the square figure, and whether the squareness seen is a quality of the red figure. Of course, redness is not squareness, and every philosopher is familiar with the *impasse* that resulted when the Megarians wrestled with this problem. If, then, the *apple* is a *physical* apple, its redness is a perspective quality of the physical apple, except for those who wish to subscribe to the inanities of Stilpo.

But is the redness a *physical* quality of the apple? The answer is that, with the meaning now generally given by mathematical physicists to "physical," the redness is not physical, any more than the redness of a red square figure is a *mathematical* quality of that figure, although its squareness is a mathematical quality. The *quality* of redness does not yield directly to the metrical treatment of the experimental physicist. But while discussing this subject it is well to point out that without colors—which I here use to include brightnesses as well—we should have practically no science of physics, since accurate measurement would be impossible. For instance, the displacement of spectrum lines would never have been discovered by touch or smell or taste; ordinary thermometers and clocks could not be read with any precision without discerned color-differences; and galvanometers reveal their physical secrets only to the physicist who can see differences in the colors shown by needle and background. Some physical instruments could, of course, be read tactually, but with what sacrifice of nicety! A blind man can learn theoretical physics from books printed in Braille; but if the only physical observations were made by blind men, there would be no important books on physics printed in Braille. Without much exaggeration one can say that everything that physicists directly measure is either spatial or temporal distance between *colored* outlines, and this is done by use of standard distances between *colored* outlines. If everything that is needed as part of the apparatus of physics is physical, colors are indispensably physical; but the physicist calls "physical" only what he as physicist is interested in ascertaining. In this sense colors are *not* physical; they are instrumentalities used by him for a purpose, just as dynamometers and interferometers are instrumentalities. Nature supplies the colors, he has to construct the other instruments named. (But nature also supplies sun, planets, and stars, which are physical

as beauty, and I assume that the integrative physiological function of the nervous system is the condition of the *unity* of all the distinguishable perspectives in one synthetic perspective, which in the suggested theory corresponds to what Kant calls the "synthetic unity of apperception."

chronometers.) Each science has its own specific problems, and the solutions of these problems are what are "scientific" for that science; all else is either instrumental or irrelevant.[7] But irrelevance of a character to a problem in hand does not prove its irrelevance to the *whole* nature of the thing that is under investigation with reference to *selected* characters.

What, then, is a "thing"? It is the integrity, i.e., the entireness, of all its relational characters, and it is all that just where it is and when it is (this "where"and "when" being also relational), but it is that only with all the respectiveness implied in all its relational characters. This may remind the malicious reader of the trite story of the Scilly (?) islanders who live by taking in each other's washing. Of course the point of the joke is its limitation to the single activity of *washing*. Let washing be only an example of men's multifarious economic and financial activities which are *all* collectively called "washing," and then the whole economic and financial life of the world consists in each person's taking in others' washings. (The trouble at present is that not enough washing is done by everybody to provide a living for everybody.) In the larger world we call the universe, everything lives by taking in some other things' washings. A joke ceases to be a joke when it is on everybody. If this be a joke, make the most of it.

The usual treatment of this problem is based on an unrecognized assumption of the absoluteness of space and time. If a natural event is supposed to be at some position in absolute space and absolute time, any relations between events may be thought of as stretching spatially and temporally between the respective positions of the events, or as being "out of" time and space altogether. But look at the matter from the point of view of the relational theory of time and space. Any relation between terms *is between* the terms, but the *kind* of betweenness is the kind of betweenness that the *relation* is. The equality in weight between an ounce of gold in Madrid in 1930 and an ounce of gold in Chicago in 1933 does not stretch *spatially* and *temporally*—does not lie *in* the space and time—*between* the two lumps; but, of course, the *spatial* distance between Madrid and Chicago is (tautologically) *spatially* between the two cities, and the *temporal* distance between 1930 and 1933 is (tautologically) *temporally* between the two years. Again, the brotherhood relation between the Prince of Wales and the Duke of York did not get spatially longer when the Prince journeyed to

[7] Of course there is nothing original in all this. Professor Dewey and his philosophical colleagues have done great service in emphasizing relativity to interests in all scientific work. Cf. *Experience and Nature*, p. 266: Qualities of inanimate things "have to be rated and accepted in order to delimit a field of inquiry, but they do not enter into the inquiry as factors or terms."

South America, leaving the Duke behind in England. To repeat, each relation is its own kind of betweenness, and each betweenness is its own kind of relation. If the terms of a relation, such as similarity, are also spatially and temporally related, *they* are, of course, in space and time, but the similarity between them is not in space and time, i.e., the similarity is not itself thereby temporally and spatially related. If the existence of anything is defined as that thing's being in time (or in space and in time), then by definition the time-relations in which it stands do not *exist*.

What then shall we say of those time-relations? One reply is that they *subsist*. Now, if all that the word "subsist" means when applied to relations is that they relate without themselves being *ipso facto* in time and space, there is no objection. But unfortunately "subsistence" has come to mean enjoyment of a status in a realm *apart*. There is no evidence, however, that any relation has any being apart from the terms it relates. *Its being is its being-between;* and if we look for a word with derivation from *sistere* to name this kind of being, I suggest *inter*sistence: relations *intersist*, and each relation has (or better, is) its own kind of intersistence. Equality intersists as equality between, distance intersists as distance between, direction intersists as direction between. The advantage gained by the use of a brand-new word is that it rids us of the danger of being misled by old associations. "Eternity" carries with it the aroma of a *Platonic* timelessness, as witness the philosophies of Santayana and Whitehead.[8] But such a relation as matrimony, for instance, is not an eternal network, "contemporary with all time," and lying in wait to enmesh and entangle unsuspecting mortals; nor is there any evidence that it makes "ingression" from eternity into the event of a wedding.

I find abstract logic congenial when it conducts its affairs properly; but when abstract logicians descend from their abstractions into the concrete world of concrete things, into the world of natural objects and natural events, they have not always resisted the temptation to ascribe to the relations in this world a status *derived from the world of abstractions* to whose rare air the logicians' lungs have habituated themselves. That the abstraction of relations from the specific terms they relate in the world of nature, and the replacement of these terms by undefined *x's, y's,* and *z's* are of inestimable value in the task of thinking, is gratefully true. Such abstraction, in freeing the thought of relations from restriction to the specific terms they relate in experience, gives free rein to ideal con-

[8] "That which without existing is contemporary with all times is eternal" (*Scepticism and Animal Faith*, p. 271). An "eternal object can be described only in terms of its potentiality for 'ingression' into the becoming of actual entities. . . . It is a pure potential" (*Process and Reality*, p. 34).

structions. But when what is thus ideally constructed is given forth as a set of eternal structures from which as "potentialities" the world of nature selects its "actual" relational fashions, we have, as again Dewey has repeatedly maintained, a hysteron proteron.

Returning from this digression, let us ask what is the date of a temporal perspective. The perspective of an eclipse contains dated events, the events at the sun when light was emitted from the sun, and the physically later event of the interposition of the moon between sun and earth. Furthermore it is conditioned by the physically still later event of the arrival of the sun's light at the earth. The perspective is a relational complex that requires time for its completion, and at the date of its completion, i.e., on the arrival of the light at the earth, what is *included* in the perspective is physically past. To repeat what has been said before, we have here a four-dimensional state of affairs. When the sun emitted *that* light the perspective was not yet; when the perspective is completed, the sun *as emitting that light* no longer is. This paradox reminds one of Zeno, but there is a difference. The perspective does not *last* eight minutes (as the astronomer finds to his grief), although it includes what in physical time was separated by eight minutes. What the astronomer does is to date the *eclipse* by the arrival of the light at the earth; and following his example we may *conventionally* date the *perspective* by its temporal station-point. But in doing so we should not deny the physical time-relations that enter into the constitution of the perspective, and, in denying them, say that the *present* perspective can not actually include physically *past* events.[9]

But such spatio-temporal perspectives as we have in vision are not the only spatio-temporal perspectives. There are, for instance, the *memory perspectives*.[10] Just as a perceptual perspective includes

[9] A careful consideration of such a perspective as that of a solar eclipse will bring out clearly the difference between what is called sensible or perceptual simultaneity and physical simultaneity. In the visual perspective we have sensible simultaneity of events that are not physically simultaneous. The fact that what is visually simultaneous is not physically simultaneous does not require us, nor does it authorize us, to construct a dilemma, and then seek to solve it by pulling its horns into its head at the station-point.

What has been said of the visual perspectives can be extended, with suitable qualifications which can not be set down here, to other perspectives which have other distance-receptors as their station points.

[10] There is, of course, nothing novel or original in the assertion that there are "perspectives" of memory. More than a hundred years ago, Hazlitt wrote: "Seen in the distance in the long perspective of waning years, the meanest incidents, enlarged and enriched by countless recollections, become interesting." But what literature has abundantly recognized, philosophy has till lately tended to ignore. This is perhaps because literature is guided by an instinctive logic, whereas philosophy has depended upon an elaborate reflective logic that is only a small branch of logic masquerading in the proportions of the whole field.

what was physically past, so a memory perspective includes what was perceptually past. At least the *prima facie* facts point that way. Even many philosophers who are unwilling to rest their case on this evidence admit that what memory naïvely gives us is the past *as past*. Thus Professor Strong, who believes that what is in memory is a temporally present fact, chides a fellow believer for not giving an unbiased description of *prima facie* memory. "When I remember quite simply and unreflectingly," he says, "the past event seems to stand before me in *propria persona*, and I am conscious of nothing else. If I had no other source of information about memory than the experience itself, I should think those philosophers right who say that we have a power of immediately beholding the past. . . . The naïve rememberer is not aware that his image is a present existence. From the first moment of the image appearing, it is given to him as lying in the past. The image is not given to him as an entity distinct from the event remembered. It is given as being that event. In other words, he is not, at the moment of remembering, aware that his memory is representative."[11]

But for the use of one word, this is an excellent statement of what is *given* in the memory experience. That one word is "image." As a reflecting epistemologist, Strong bethinks himself of the fact that what is remembered "differed in time and in character from the real event," concludes therefrom that it can not be that real event, and then calls it an "image." By the use of this word he introduces into his description of the memory experience a theory about that experience. There can be no objection to the introduction of theory into a description; such introduction seems inevitable. But there can be a question as to the acceptability or exclusive tenability of Strong's theory. The difference "in time and in character" of what is in the memory experience "from the real event," falls in beautifully with the theory that "the real event" is in two temporal perspectives, first an earlier perceptual perspective, and then a later memory perspective.[12] Just as the same cube may have one character in one spatial perspective and another character in another spatial perspective,

[11] "The Missing Link in Epistemology," this JOURNAL, Vol. XXIX (1932), pp. 676–677. So far as my experience goes, I think that Strong is mistaken in saying that in memory I am conscious of nothing else than the past event. There seem always to be *present sensible* factors *as well as past* factors in the *total* experience of which memory is a factor; there are at least present "organic sensations."

[12] Here "earlier" and "later" are, of course, used in accordance with the conventional dating of temporal perspectives, to which I referred in the paragraph before the last in the text. An adequate mathematical treatment would justify this conviction, but I can not go into this here.

so the same event[13] may have one character in one perspective (the perceptual perspective) and another character in another perspective (the memory perspective). And as the difference in spatial location in the case of the spatial perspectives is not a difference in, say, the location of the same cube in two perspectives but of the respective station-points, so the difference in date in the case of the memory perspective may not be a difference in the date of the real event, but of the temporal station-points. *What thus logically may be, I assume actually to be.* Thus while I describe what I find in memory in terms of a theory, my theory allows me to accept the *prima facie* evidence of the memory experience without proceeding in cross-examination to browbeat the witness into saying what he does not mean to say. I merely bring out what was implicit in his first statement. He said "then," and I ask whether that "then" does not get its meaning from its temporal relations among which is the relation to the *present perceptual facts* of his experience? And when he answers "Yes," he does not feel that he has been improperly badgered into this answer.

There are many differences between perceptual and memory perspectives. For instance, in the former an object that is more distant in time is relatively smaller spatially. This is not necessarily the case in the latter. In other words the relation between temporal distance from station-point and spatial character of what is in a perspective is not strictly a mathematically functional relation. In connection with the temporal station-point of a memory perspective there is a physiological organism, whose nervous condition has presumably been changing since it was at the temporal station-point of the earlier perceptual experience, and its changes condition the character that the remembered object (comes to have) *had* in the memory perspective of that organism.[14]

Note the parenthesis in the immediately preceding sentence. What is included in the parenthesis is included as a sop to idiom. In any memory experience what is remembered *had,* not *has,* the remembered character. If we are to take memory seriously, the tenses used in reporting it must be true to the experience. We have already seen, when dealing with the physical perspective of

[13] The "sameness" of the event is determined by its various relations to other events. A detailed treatment of this identification is impossible here. In principle it does not differ from the identification of "the same event" in two perceptual perspectives, say yours and mine when we say we *see* the "same event."

[14] The relevant processes taking place in the organism are thus factors conditioning the memory perspectives. For this reason I call the station-point "physiological," to bring out the fact that it is not purely a chronogeometrical station-point.

a solar eclipse, that the sun in that perspective is not the sun *physically simultaneous* with the moon in that perspective, nor with the station-point of that perspective. The perspective *includes* what is not physically simultaneous; but "includes" is *grammatically* a present tense, and the "inclusion" is not a *physically present* inclusion in the *temporal* sense of the word "present." However, since seen sun and moon are both *sensibly* present, in the temporal sense of the word "present," the tense-form "includes" does not call for a demurrer; it calls only for qualification.

But the case is different when we come to a memory perspective. When we say that a memory perspective *includes* a past event, we are using a tense-form for the simple reason that English verbs in the indicative mood have no specialized tenseless forms. Hence in tenseless predication idiom borrows the present tense-form, as when we say, "All men *are* mortal," not meaning to restrict the assertion to men now living. Such "general presents" stand in the same relation to real tenses as propositional functions stand to propositions. In the same way, a memory perspective always *includes*, so far as I can judge from my experience, not only past objects and events, but also sensibly present objects or events. Perhaps the most adequate way of making the proper assertion is to use the circumlocution suggested by the recent parenthesis and say that in a memory perspective a past event *comes to have been* what we remember it as having been; and what it comes *to have been*, it *was*. But this does not necessarily mean that it *was* in the *contemporary* perceptual perspective what it *was* in the memory perspective. For instance, my breakfast table of this morning, in the perspective of any moment when I was eating, *had* certain characters; that same breakfast table in my memory experience likewise *had* certain characters, and these two sets of characters need not have been identical. But both *were* characters of my past breakfast table, one in one perspective and the other in another perspective. What I said of projection is true of all perspectives: no perspective transcends *itself;* the memory experience does not transcend *itself*, but it transcends the date of its station-point.

I now wish to bring out clearly the difference between the theory here presented and that of the instrumentalist. It is not possible here to go into details, but a few quotations will serve to remind the reader of the instrumentalists' position. "How," Professor Dewey asks, "can the present belief jump out of its present skin, dive into the past, and land upon just the one event (that *as* past is gone forever), which, by definition, constitutes its truth? I do not wonder the intellectualist has much to say about 'transcendence' when he comes to dealing with the truth of judgments about the

past. . . ."[15] But it was Professor Mead[16] who elaborated this position. "The implication of my position," Mead says, "is that the past is such a construction that the reference that is found in it is not to events having a reality independent of the present which is the seat of reality, but rather to such an interpretation of the present in its conditioning passage as will enable intelligent conduct to proceed. It is, of course, evident that the materials out of which the past is constructed lie in the present. I refer to the *memory images* and the evidences by which we build up the past, and to the fact that any reinterpretation of the picture we form of the past will be *found in a present* . . ." (p. 29, my italics). Again, "our pasts are always mental in the same manner in which the futures that lie in our imaginations ahead of us are mental. They differ, apart from their successive positions, in that the determining conditions of interpretation and conduct are embodied in the past as that is *found in the present* . . ." (p. 31, again my italics). It is true that Mead speaks of any such past as a "perspective of our own thought" (p. 166), and that he read before the Sixth International Congress of Philosophy a paper on "The Objective Reality of Perspectives" (reprinted as the last chapter of the volume containing the Carus lectures). But nowhere does Mead go and stay beyond the position that *a perspective is in the station-point of the perspective.* He first draws into the date of the station-point of a memory perspective what in the perspective was earlier than the station-point; and then, as a compensatory feat, he projects this intake backward in time as an "ideational structure" (p. 28). For Mead, as for Dewey, for Lovejoy as for Strong, everything in the perspective of memory is really *in the present.* The past thus being for Mead in the present, the pastness of the past is not the pastness of what *has* passed, but of what *in the present is ideationally passed backward.* Mead objects to the literally projectionist view of perception, mentioned above on page 311 (although with his

[15] *The Influence of Darwin on Philosophy,* p. 160. Professor Lovejoy in criticizing Dewey's denial of knowledge of the past (*Essays in Critical Realism,* pp. 63 ff.) does it from a point of view in one important respect identical with Dewey's; both assume that a "present" memory is ontologically confined to the present. From this point of agreement Dewey goes on to deny "knowledge" of the past, whereas Lovejoy goes on to the assertion of a "representative" function in memory-knowledge. I suggest the discard of the point of view common to the disputants. Both put what is in the *perspective* into the *station-point* of the perspective. In this suggestion I follow the example set by Dewey on other occasions, as when, for instance, he proposed to circumvent the discussion of the issues between interactionism, parallelism, and epiphenomenalism by denying the common premise of all the controversialists (*Experience and Nature,* p. 252).

[16] In his Carus Lectures, *The Philosophy of the Present,* to which the page references in the text are made.

emphasis on the "manipulatory area" he is perilously near to making of vision a projection); why does he adopt a literally projectionist view of memory?

For Mead there is never a "reference" in any present to any past other than that which is ideationally constructed in the present in which the reference is made (p. 30), and yet such pasts are continually changing (*passim*). It is difficult to understand how, under these conditions, it can be known that such pasts do continually change; and yet Mead somehow knew, else with his almost incomparable intellectual honesty he would not have written what he wrote: "When one recalls his boyhood days he can not get into them as he then was, without their relationship to what he has become; and if he could, that is if he could reproduce the experience as it then took place, he could not use it, for this would involve his not being in the present within which that use must take place" (p. 30). When Mead was writing this, was he not *making reference* not only to an ideationally constructed past, but also, by contrast, to a past as it was in a contemporary perceptual perspective? The necessary affirmative answer to this question brings out an important difference between a perceptual spatio-temporal perspective, and a memory perspective. In the former the *physical* pastness of what is in the perspective is not *given;* it is *inferred* from knowledge gained with regard to the finite speed of physical propagations. In the memory perspective, the *perceptual* pastness of the remembered object is *not* inferred; it is *given.* That the object remembered had in the earlier perceptual perspective a different character from what it had in the memory perspective *is an inference,* and all inferences involve references. For the naïve rememberer the naïve memory is never mistaken. And for my theory it is never mistaken, *when* it is taken just as it is, namely, the past *from the station-point of a later perspective;* any mistake consists in wrongly taking the characters and relations which an object or event had in a memory perspective as being necessarily the characters and relations which the same object had in the earlier perceptual perspective, just as a sensibly "elliptical" character which a penny has in a perceptual perspective may be wrongly taken as an "elliptical" character it has in some other perspective.[17]

[17] It is impossible in this paper to make a detailed comparison between the perspective theory of the past, here presented, and the theory of the instrumentalist. But there is one further comparison I wish briefly to make. Judged from the point of view of the perspective theory, Dewey is correct in making any past within a perspective a "content" within that perspective (*op. cit.*, p. 161). "The content," he says, "of any idea about [I should say "of any perspective of"] yesterday's rain certainly involves past time." But when he goes on to say (without italics): "but the distinctive or characteristic aim of judgment is none the less to give this content a *future reference* and function,"

If space had permitted, I should in this paper have contrasted the view presented in the earlier part of this paper with Russell's treatment of the "place at which" and the "place from which," as given in his *Analysis of Mind* and *Our Knowledge of the External World.* There is an important difference, in spite of similarity of terminology; but the development of this difference must be deferred to another occasion.

In this paper I have often used "perceptual" and "sensible" as synonymous. I have done this for the purpose of simplifying the problem. But this fact should not be taken to mean that what Russell, following Semon, has called "mnemic" factors do not in my view condition characters of objects in perceptual perspectives. But the discussion of this complication, as well as the discussion of many other features of experience, such as are found in the "experience" of historical, geological, and astronomical pasts that are *not remembered* pasts, as well as of really imaginary objects, hallucinations, etc., does not lie within the scope of this paper.

Nor must it be supposed that in giving a *logical* account of perceptual and memory experience I have thought to *identify* logic with experience, any more than a mathematician, in giving a mathematical account of a rectangular sheet of paper, should be interpreted as meaning that the sheet of paper is just and only a *mathematical* rectangle. As Dewey has persistently maintained, any experience is a "part of nature," not a logical construction; and unless "nature" had "experiences" within it, no mere logician, were then a logician possible, could spin a real nature out of his logical "constructions." Nature is not something existing by grace of logic; logicians exist from time to time by grace of nature; and when they do, they proceed to pay attention to certain features of nature, abstracting these features and freely manipulating them,

he is justified only on the assumption that he is giving an arbitrary limitation to the "reference and function" of judgment. If he means that naïve memory is not a "judgment" about the past, I should be willing to agree with him as a matter of terminology. But if he denies that there is frequently a "reference" to an earlier perception, I should say that his assertion does not tally with my own experience. Often my interest in discovering what the past was when it was present in my previous perception, differs from my interest in what the future will be in my later experience, not in what I am going to *do* about it, but in what I am going to *judge* about it. If all that the "prospective reference" in judgment means, when one is in doubt, is that one is interested in *later* securing a valid judgment, I agree; but there may be an interest in securing a valid judgment *as to what the past was when it was present,* as well as in securing a valid judgment as to what the future will be when it will become present. And I take it that what the judgment is *about* is what is meant by the "reference" of a judgment. To agree that there is *such* a "reference" while asserting that "reference" is not the right word to use here is to raise a lexicographical issue, which can easily be settled by reference to lexicons.

thus producing "logical constructions." Then some of these logicians are rapt in wonder as to why some of their "constructions" fit nature so nicely. Others, their eyes in fine frenzy rolling, rave that Nature is their handiwork.

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BOOK REVIEWS

Perception. H. H. PRICE. London: Methuen and Co. 1932. vii + 321. New York: Robert M. McBride. 1933. ix + 332 pp.

In the opinion of this reviewer, this book is one of the most stimulating and original studies in the field of epistemology and theory of knowledge which have appeared for some time. It is both an exposition of the author's views and a criticism of traditional theories.

Chapter I seeks to establish the reality of sensing and of sense-data. (As our belief in the existence of material things is based principally upon sight and touch, the author, for the most part, confines his analysis to these senses.) The term "sense-datum" is a neutral term, an ultimate, standing for something "whose existence is indubitable, something from which all theories of perception ought to start . . . and from which all past theories have in fact started" (p. 19).

(Chapter II.) Though sensing is *necessary* for the holding of beliefs in the existence of something beyond the sense-data, it is not *sufficient*. There must also be perception. Hence there arise the two distinct fundamental questions with which this study is concerned: (1) What is perceptual consciousness and how is it related to sensing? and (2) What is the relation between a sense-datum and a material thing when the thing is present to the senses of the being who senses the sense-datum?

Naïve Realism maintains in answer to (1) that perceptual consciousness is the *knowing that* there exists an object to which the sense-datum belongs, and in answer to (2) that, in the case of the visual and tactual datum, the datum *belongs to* a material thing, that is, is literally *part of the surface of* the thing. Negatively, the author concludes that both contentions are refuted by the phenomenological form of the Argument from Illusion, positively, that sense-data are somato-centric and that they exist only in the somato-centric complex. In Chapter III, other attempts to make the naïve realistic position defensible are reviewed, e.g., Prof. Whitehead's Multiple Location theory, but the author concludes that all attempts have failed of their purpose.

Chapter IV is devoted to extended critical scrutiny of the Causal

Theory. The latter's answers to the two fundamental questions are stated as follows: (1) In the case of all sense-data, "belonging to" means "being caused by"; (2) perceptual consciousness is fundamentally an *inference* from effect to cause. The author contends that the methods employed to prove these assertions are all artificial and unconvincing and, in fact, involve a vicious circle, because the facts of experience indicate that the conception of material thinghood is *innate* and *a priori* and that the notion of cause does not arise until we attempt to analyze the conception of a material thing. At the most, these arguments for the Causal Theory "will only prove the existence of *some* non-sensible something having an ordered plurality of factors: they will not prove the existence of a material world" (p. 99).

In Chapter V the author begins the exposition of his own answers to the two questions. A sense-datum is a particular existent. Visual and tactual sense-data are *taken to be* constituents of the surfaces of objects, but since it is obvious that some actually are not, e.g., hallucinatory data, it is equally obvious that they can not be *defined* as such. Let us call them *expanses* or *extents,* for these terms imply that they have size and position without affirming that all sense-data are constituents of a physical surface (pp. 103–113).

Sense-data are not substances but events. However, they can not be characterized as physical, mental, or cerebral events. All we can say at this point in the analysis is that (1) there is a relation between sense-data and the psycho-cerebral compound; (2) a sense-datum is always part of a sense-field; (3) all sense-data (except hallucinatory) are united with external objects by the relation of "belonging to" (to be explained later); (4) all sense-data which belong to the same thing, even those sensed by different minds, are somehow united with one another (pp. 116–138).

In Chapter VI, the author temporarily drops these problems and turns to a consideration of perceptual consciousness. The first stage or primary form of perception is *perceptual acceptance.* In this stage the perceptually conscious subject *takes for granted,* when he senses a particular visual or tactual sense-datum, that there now exists a material thing to which this datum "belongs." This is not inference, nor belief, nor knowledge by acquaintance, nor knowledge of facts about. It is primitive credulity. The ostensible object is not a particular. What is taken for granted is that so-and-so exists, that a material thing exists, that it is grass, etc. But this taking for granted is implicit, not explicitly expressed; hence it is also not judgment.

(Chapter VII.) Of course, perceptual acceptance need not be correct. It must be progressively confirmed by a successive series

of perceptions, in which case the second stage, *perceptual assurance,* is reached. When this process succeeds we actually do find that behind or underneath the original expanse there is some specific material thing, e.g., a table or a wall. When the process breaks down we get a conviction of the non-existence of the originally accepted material thing.

It is obvious that this is a self-correcting or autonomous form of consciousness. Its validity can not be seriously questioned because it is "an irreducible form of consciousness, an impregnable ultimate." Nothing better can be got. To be sure, it can never be knowledge: "it can only be rational belief, based on extremely strong evidence" (p. 198).

In Chapter VIII, the author returns to the definition of "belonging to." To be assured that a certain sense-datum belongs to a material thing, we must be assured that it is a member of a certain sort of group of sense-data, a Family of Sense-data. A Family of Sense-data is a collection of sense-data prolonging itself through time, having for its center a standard solid situated in a certain place in a system of solids, and consisting, in addition, of a set of distortion series (of sense-data) and a set of differentiation series (p. 227). But this notion implies only sensible occupancy and not physical occupancy of space. The author's conception of the latter is explained in Chapter X. When the place where the standard solid is situated reveals certain causal characteristics, e.g., magnetic attraction, and particularly impenetrability, we accept this place as being physically occupied. Thus a material thing is a complex of a family of sense-data and a physical object having the above causal characteristics. Obviously then "we have no determinate knowledge of the intrinsic qualities of the physical object, though we know that it has some intrinsic qualities or other" (p. 296). Kant's notion of the thing-in-itself is therefore well-founded. The Causal theory unjustifiably identifies the material thing with the physical object and phenomenalism unjustifiably identifies the material thing with the family of sense-data. His theory of "belonging to" the author suggests calling the *Collective Delimitation Theory.*

In the last chapter (X) the author considers the problem of the origination of sense-data. That a sense-datum exists we know by sense alone. It is an event, but not an event in a world of complete things; it is an event of a unique order: it happens nowhere and to nothing. Individual sense-data are dependent, each on a certain mind, but families of sense-data are not, wherefore the world of complete things is public and independent of minds. This world is discovered, not made, and it is as real as any realist could desire it to be.

This book is not an easy one to read. Both content and terminology are distinctly original, and the author, especially in the critical parts, reveals a dialectical dexterity which, at least on first reading, seems at times to be a bit tortuous. On the whole, the present reviewer is very friendly to the author's position and especially so to his way of approaching the traditional problems. Perceptual consciousness is here permitted to speak for itself, without being at the outset embarrassed with a lot of metaphysical presuppositions.

For any serious criticisms to be significant, much more space would be required than this reviewer is allowed. However, several questions may justifiably be asked. In limiting his discussion so largely to the consideration of visual and tactual sensation, is not the author too much ignoring other sensory data which should be considered in a well-rounded theory of perception? Does the term "expanse" imply that the visual datum is always two-dimensional only? Does the author mean to imply that sensing is a distinct and self-existent mental process? This question is asked because it will occur at once to those readers who are inclined to question the definite differentiation of sensation and perception. The author agrees that an expanse has spatial position, shape, and size. Does not the mere awareness of such a datum then necessarily imply perception, that is, the "perceptual acceptance" of the existence of some thing? Of course, if the author means merely to distinguish sensation and perception *in abstracto* for purposes of analysis only, the above questions would not be particularly important.

On another point the reviewer is somewhat confused: On page 205 the author seems to imply that what is accepted in perception *is* a particular thing, whereas on page 166 he seems to deny this. What is the basis for the "knowing that" a material thing has "some implicit qualities or other," when it is agreed that we have no determinate knowledge of such qualities? Is it inference based on some compulsion such as logical necessity?

Families of sense-data "when they actually exist are mind-dependent events"; however, "facts about sense-data do not presuppose the actual existence of even one observer." The latter of these two statements will undoubtedly offend those who insist on the *a priori* postulation of a self which contributes something to perceptual consciousness and even to sensation. The reviewer assumes that the author, for the purposes of this study, wished to avoid any metaphysical assumptions. If so, his position on this issue might have been somewhat more definitely stated.

The above questions are raised not so much in the spirit of criticism as in the spirit of inquiry. After all, their occasion may be the

failure of the reviewer to discover the answers rather than the failure of the author to give sufficient consideration to them. Of one thing this reviewer is certain: Mr. Price has made a noteworthy contribution to critical inquiry.

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Il Realismo Puro. CESARE RANZOLI. Milano: Società Anonima Editrice Dante Alighieri. 1932. 365 pp.

This volume is more interesting as an historical event than as a contribution to philosophy. Its realism, though somewhat attenuated, marks it in strong contrast to the prevailing temper of philosophic thought in contemporary Italy.

The doctrine, we are told (p. 9), is realism because it affirms the existence "of a reality other than our consciousness, endowed with attributes and laws which our consciousness knows, and does not create." It differs from "natural realism" in giving "reasons" rather than instinctive feelings as the basis of our belief in an external world (p. 11); from "aristotelian-scholastic realism," in making "objects and their images a single thing; but it can reach such a conclusion because it denies absolute value to the externality of objects and reduces it to the heterogeneity of their properties" (p. 11); from "critical or agnostic realism," in asserting that the diversity of objects from the act of knowing "could not be diversity except in so far as it is known as such and thus is comprised in the act of knowing, though distinct from it" (p. 12); from "idealistic realism," in denying the "ideal" character of the external object (*Ib.*).

There is no space to develop either the meaning of these differences or the proofs of theses based upon them. But it may be suggestive to say that Ranzoli's doctrine in its general outline is like that of James's *Radical Empiricism,* as developed in Mr. Holt's *Concept of Consciousness.* But whereas Mr. Holt in that book relied on such terms as "external relations," and "cross-sections," to give mentality or externality to his neutral entities, Ranzoli uses the word "moments." Thus we find that "the object in itself and the object known constitute a single reality" *atteggiata in due momenti* (p. 173). But just how these moments are distinguished from each other is not told nor how our *atteggiamento*—whose? why? on what occasions?—can produce so strange an effect. When we see in the end of the sentence that these moments are "absolutely distinct one from the other, yet invincibly united one to the other," we are more than ever mystified. The hand may be that of Ranzoli, but the voice is that of Gentile.

Reviews should not be given over to the indication of minor

errors, but Italian readers should be warned of the confusion between American neo-realism and critical realism on page 155.

GEORGE BOAS.

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JOURNALS AND NEW BOOKS

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LOGOS. Anno XVI, Fasc. 1. Dio nella filosofia di T. Reid: *M. F. Sciacca.* Il rapporto tra stato e diritto secondo il Wundt: *G. D'Eufemia.* Il problema dell'universale-particolare: *G. Galli.* Moralità e libertà in una concezione estetica dell'universo: *M. Di Domenico.*

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Aspelin, Gunnar: Hegels Tübinger Fragment. Eine Psychologisch-Ideen-geschichtliche Untersuchung. (Lunds Universitets Årsskrift N. F. Av. 1, Bd. 28, Nr. 7.) Lund: Håkan Ohllssons Buchdruckerei. 1933. 70 pp.

Cabot, Richard C.: The Meaning of Right and Wrong. New York: Macmillan Co. 1933. x + 463 pp. $2.50.

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Wavre, R.: Mathématique et Philosophie. (Archives de la Société Belge de Philosophie, Cinquième Année, Fasc. No. 1.) Bruxelles: Maurice Lamertin. 1933. 16 p. 3 fr.

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Combes, Raoul: Histoire de la Biologie Végétale en France. (Bibliothèque de Philosophie Contemporaine.) Paris: Félix Alcan. 1933. 172 pp. 15 fr.

D'Eypernon, Fr. Taymans: Le Blondélisme. (Museum Lessianum, Section Philosophique, No. 15.) Louvain: Museum Lessianum. 189 pp. 32 fr.

NOTES AND NEWS

Professor John Dewey will give next January the Lectures on Religion in the Light of Science and Philosophy on the Dwight Harrington Terry Foundation for 1934 at Yale University.

Mr. Floyd L. Sampson has been elected as an instructor in the department of philosophy and religion at the University of Denver for the academic year beginning September, 1933.

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